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(54) Magnetic strip assembly for use with socket-type tools and the like

(57) A magnetic strip assembly for use with socket-type tools includes a flexible magnetized strip (12) which is releasably attached to a carrier member (14) with pressure sensitive adhesive. The strip is die-cut to form an array of lift-off inserts (20) in various sizes and shapes for selective removal and registered placement within a socket (28) of a drive-tool (26). The insert (20) magnetically holds a metal fastener (30), such as a nut or bolt, for initiating nut or bolt tightening and is especially adapted for applications in hard-to-reach areas. A core (22) of the insert is attachable to an end of a rod to magnetically retrieve small metal objects, such as washers, nuts and screws from similar locations.

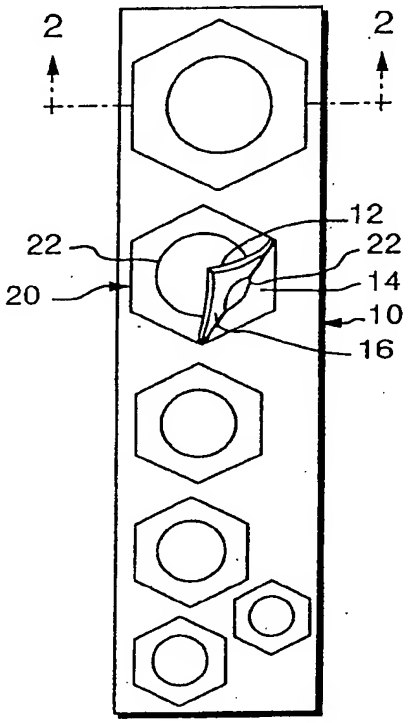

FIG. 1

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Description

Field of the Invention

[0001] This invention relates generally to an accessory for hand tools and especially for socket type-tools. In particular, the device of this invention concerns a magnetic strip assembly for providing conventional socket tools with magnetic holding capabilities.

Background of the Invention

[0002] Automobile mechanics, as well as other types of repairmen, inevitably encounter the difficulties associated with bolt-tightening, nut-driving and similar operations that must be performed within confined areas.
[0003] In an attempt to facilitate these procedures, individual magnetized tools are currently available. However, these tools are relatively expensive and a complete tool set, such as a socket wrench set, typically consists of multiple sockets and is relatively costly. Furthermore, dual sets of tools, to cover both standard (conventional) and metric sizing, compounds the expense.
[0004] Another problem with current magnetized tools is that the misplacement or loss of a particular size tool, especially at the job site, presents a frustrating situation.
[0005] The present invention is intended to overcome these and other shortcomings of the presently available magnetic drive tools by providing a relatively inexpensive device suitable for on-location conversion of socket drive-tools to magnetic tools, if and as needed.

SUMMARY OF THE INVENTION

[0006] Briefly, the magnetic strip assembly of this invention includes a flexible magnetized strip that is preferably releasably bonded to a carrier member. The strip is pre-cut to form an array of lift-off inserts in various shapes and sizes for compatible seating within a socket.
[0007] The magnetic strip assembly can be conveniently stored within a tool box to be available at the job site. Additionally, the carrier member can be color-coded or marked with other indicia for reference. A selected insert may thus be readily identified and peelably removed from the carrier member as needed.
[0008] A disc-like core defining a central aperture of the insert, can be removed from the insert and applied to an end of a rod for use in retrieving metal objects especially in hard-to-reach places.
[0009] In an alternative embodiment, the insert is continuous, having no central aperture, and provides an intensified magnetic field, for holding larger screws or bolts.
[0010] In view of the foregoing, it should be apparent that the present invention overcomes the previously discussed deficiencies and provides a practical solution.
[0011] Having thus summarized the invention, it will be seen that it is an object thereof to provide a magnetic strip assembly for use with socket-type tools of the general character described herein which is not subject to the aforementioned limitations.
[0012] Another object of this invention is to provide a magnetic strip assembly with lift-off inserts for use with socket-type tools.
[0013] A further object of this invention is to provide a magnetic strip assembly for use with socket-type tools that is practical to use, reliable in operation, simple in design and economical to manufacture.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] In the accompanying drawings in which is shown exemplary embodimentsof the invention:

FIG. 1 is a plan view of a magnetic strip assembly in accordance with this invention illustrating a plurality of pre-cut hexagonal shaped flexible magnetic inserts in progressively varying sizes with one of said inserts being shown partially removed from a carrier member;
FIG. 2 is a sectional view, taken substantially along line 2-2 of FIG. 1 showing the insert, an adhesive backing and the carrier member;
FIG. 3 is an exploded view in perspective, of a typical nut driver tool illustrating placement of a magnetic insert and a hex nut to be magnetically held within the socket of the nut driver tool;
FIG. 4 is an elevational view, partially in section, taken substantially along line 4-4 of FIG. 3, showing the nut driver socket with the magnetic insert holding the hex nut in contiguous relationship during initiation of threaded engagement with a bolt; this illustration can also be interpreted as showing the nut driver holding a hex head cap screw in a vertical position ready to be threaded into a tapped hole;
FIG. 5 is a plan view, with a portion broken-away, illustrating an alternative configured magnetic strip assembly wherein the inserts have an uncut core;
FIG. 6 is an exploded elevational view, partially in section, detailing a socket for a ratchet drive tool having a magnetic insert of FIG. 5 seated in the socket and a hex nut positioned to be magnetically held in the socket for engagement with a threaded bolt; and
FIG. 7 is an elevational view, in perspective, of a retrieval rod improvised by use of a pencil shaft, showing a magnetic insert core affixed to an end of the rod for pick-up of small metal objects.

DETAILED DESCRIPTION OF THE INVENTION

[0015] Referring now to the drawings, reference numeral 10 generally denotes a magnetic strip assembly of this invention. The assembly 10 includes a flexible magnetic strip 12, such as commercially available flexible magnetic stripping. The magnetic strip 12 of the as-

the insert during initiation of threadable engagement of the fastener.

2. A magnetic strip assembly as claimed in claim 1 wherein the magnetic strip is substantially co-extensive with the carrier member and defines a plurality of inserts.

3. A magnetic strip assembly as claimed in claim 1 or 2 wherein the or each insert is defined by at least one of a die-cutting, scoring and slitting of the magnetic strip in a predetermined pattern.

4. A magnetic strip assembly as claimed in claim 1, 2 or 3 wherein the magnetic strip is flexible.

5. A magnetic strip assembly as claimed in claim 4 wherein the flexible magnetic strip includes an adhesive backing on one surface thereof.

6. A magnetic strip assembly as claimed in any preceding claim wherein the insert includes a central aperture defined by a removable core.

7. A magnetic strip assembly as claimed in claim 6 wherein the core defines a magnetic disc, said magnetic disc being attachable to the end of a rod for magnetic retrieval of metal objects within confined areas.

8. A magnetic strip assembly as claimed in any preceding claim wherein the carrier member includes indicia for denoting characteristics of the insert(s).

9. A magnetic strip assembly as claimed in any preceding claim wherein the magnetic strip is magnetized in multi-pole formation.

10. A magnetic strip assembly as claimed in any preceding claim 1 to 8 wherein the magnetic strip is magnetized in conventional pole formation.

11. A magnetic strip assembly as claimed in any preceding claim wheein the carrier strip is a silicone-coated release paper

12. A strip assembly for use with socket-type tools comprising a carrier member, an insert strip having a plurality of pre-formed patterns defining inserts, said inserts being selectively removable from the carrier member and accommodatable within a correspondingly sized socket, said socket being adapted to receive a fastener registrable with the insert for interaction with the insert to temporarily retain the fastener within the socket.

13. A strip assembly as claimed in claim 12 wherein the insert strip is attached to the carrier member by a pressure sensitive adhesive.

14. A strip assembly as claimed in claim 12 or 13 wherein the patterns defining the inserts correspond to specific socket configurations.

15. A strip assembly as claimed in claim 14 wherein the carrier member is coded for identifying the patterns.

16. A strip assembly as claimed in claim 12, 13, 14 or 15 wherein the insert includes a removable core element that defines a central aperture.

17. A magnetic strip assembly for use with socket tools comprising a magnetic strip, said magnetic strip defining at least one insert, said insert being frangibly detachable from the magnetic strip for accommodation within a tool socket, said socket being adapted to receive a fastener registrable with the insert for magnetic interaction to temporarily retain the fastener within the socket.

18. A magnetic insert for use with socket tools, said insert having opposite faces and a magnetic force field emanating from at least one of said opposite faces, said insert substantially conforming to and being adapted for accommodation within a tool socket for magnetic interaction with a fastener registrable within the socket.

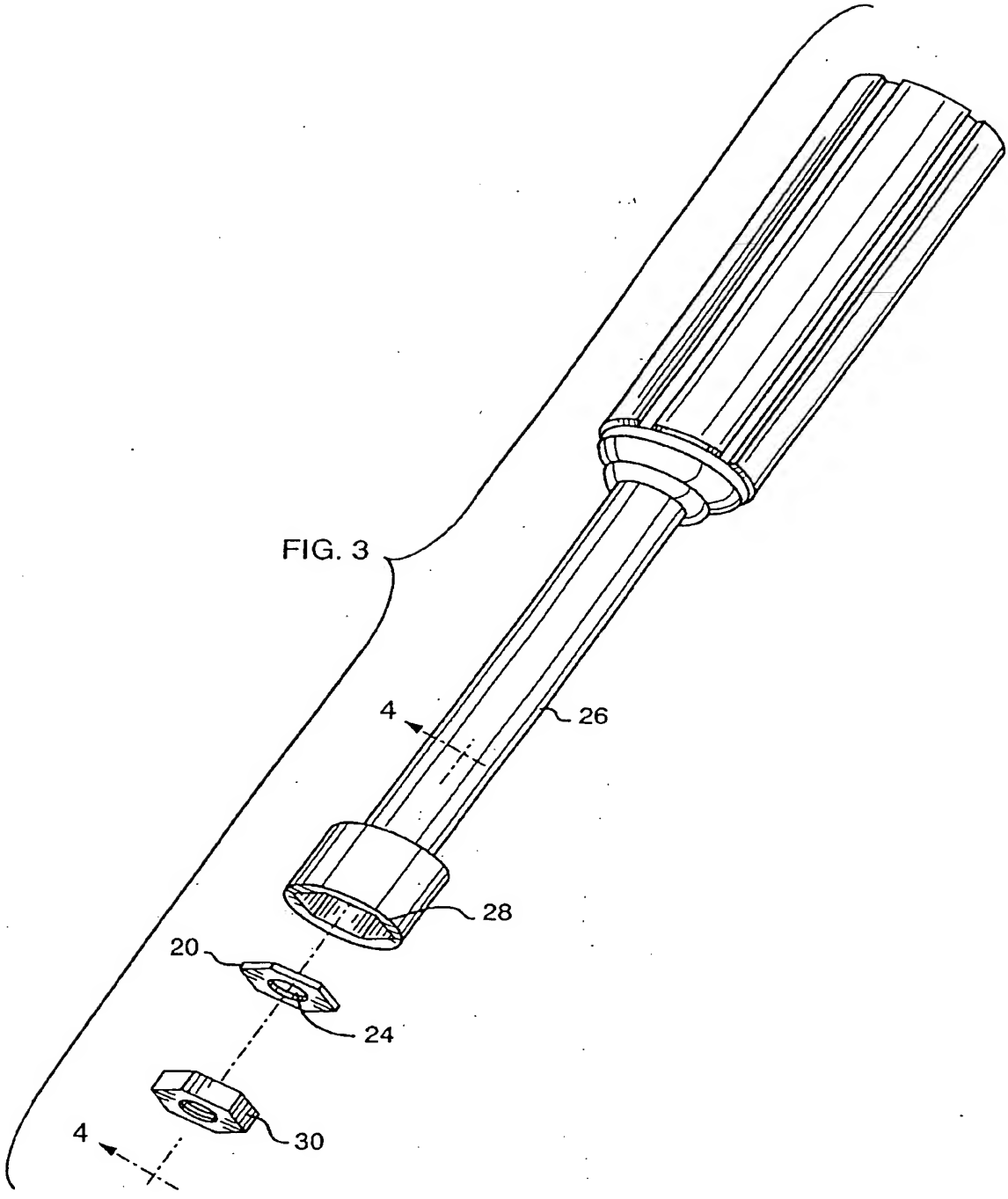

FIG. 3

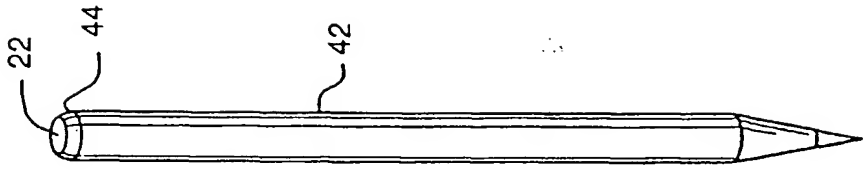

FIG. 7

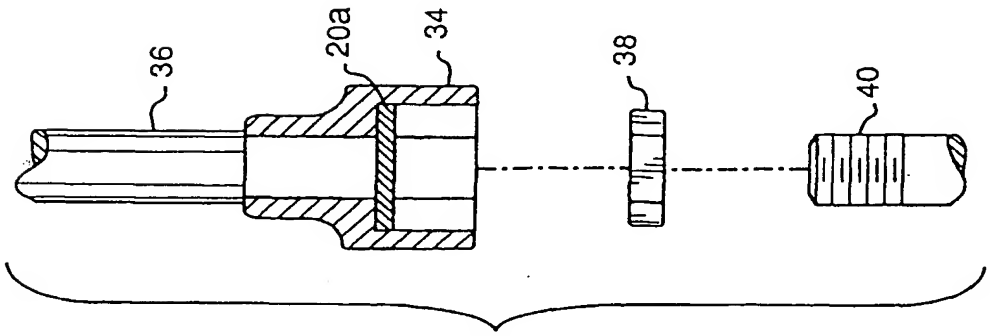

FIG. 6

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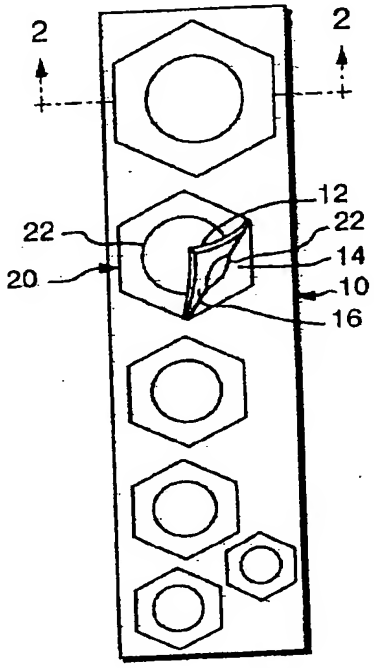

FIG. 1

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EUROPEAN SEARCH REPORT

Application Number
EP 00 30 7112

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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A	* abstract; claims; figures *	1,12,17	
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B25B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	24 April 2001	Majerus, H

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 00 30 7112

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